

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Cass County Area, North Dakota

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units in the Hydric Soil Interpretations table meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1996).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

These map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
1: FARGO-ENLOE SILTY CLAYS	FARGO	Yes	lake plain	2B3	YES	NO	NO
	ENLOE	Yes	depression	3,2B3	YES	NO	YES
2: TONKA SILT LOAM	TONKA	Yes	depression	3,2B3	YES	NO	YES
3: PARNELL SILTY CLAY LOAM	PARNELL	Yes	depression	3,2B3	YES	NO	YES
4: PERELLA SILTY CLAY LOAM	PERELLA	Yes	depression	3,2B3	YES	NO	YES
5: DOVRAY SILTY CLAY	DOVRAY	Yes	depression	2B3,3	YES	NO	YES
6: PARNELL SILTY CLAY LOAM, PONDED	PARNELL	Yes	depression	2B3,3	YES	NO	YES
9C: NUTLEY-FARGO SILTY CLAYS, 1 TO 9 PERCENT SLOPES	NUTLEY	No	---	---	---	---	---
	FARGO	Yes	lake plain	2B3	YES	NO	NO
10: FARGO-RYAN SILTY CLAYS	FARGO	Yes	lake plain	2B3	YES	NO	NO
	RYAN	Yes	flood plain	2B3	YES	NO	NO
11: NAHON SILT LOAM, 0 TO 2 PERCENT SLOPES	NAHON	No	---	---	---	---	---
12: HEGNE-ENLOE SILTY CLAYS	HEGNE	Yes	lake plain	2B3	YES	NO	NO
	ENLOE	Yes	depression	3,2B3	YES	NO	YES
14B: BARNES-BUSE LOAMS, 3 TO 6 PERCENT SLOPES	BARNES	No	---	---	---	---	---
	BUSE	No	---	---	---	---	---
14C: BARNES-BUSE LOAMS, 6 TO 9 PERCENT SLOPES	BARNES	No	---	---	---	---	---
	BUSE	No	---	---	---	---	---
14D: BARNES-BUSE LOAMS, 9 TO 15 PERCENT SLOPES	BARNES	No	---	---	---	---	---
	BUSE	No	---	---	---	---	---
15: EMRICK-HEIMDAL LOAMS, 1 TO 3 PERCENT SLOPES	EMRICK	No	---	---	---	---	---
	HEIMDAL	No	---	---	---	---	---
15B: HEIMDAL-EMRICK LOAMS, 3 TO 6 PERCENT SLOPES	HEIMDAL	No	---	---	---	---	---
	EMRICK	No	---	---	---	---	---
15C: HEIMDAL-ESMOND LOAMS, 6 TO 9 PERCENT SLOPES	HEIMDAL	No	---	---	---	---	---
	ESMOND	No	---	---	---	---	---
15D: ESMOND-HEIMDAL LOAMS, 9 TO 15 PERCENT SLOPES	ESMOND	No	---	---	---	---	---
	HEIMDAL	No	---	---	---	---	---
16B: BARNES-SIOUX LOAMS, 3 TO 6 PERCENT SLOPES	BARNES	No	---	---	---	---	---
	SIOUX	No	---	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
16C: BARNES-SIOUX LOAMS, 6 TO 9 PERCENT SLOPES	BARNES	No	---	---	---	---	---
	SIOUX	No	---	---	---	---	---
16D: BARNES-SIOUX LOAMS, 9 TO 15 PERCENT SLOPES	BARNES	No	---	---	---	---	---
	SIOUX	No	---	---	---	---	---
17B: BARNES-SVEA LOAMS, 2 TO 5 PERCENT SLOPES	BARNES	No	---	---	---	---	---
	SVEA	No	---	---	---	---	---
18: BEARDEN SILTY CLAY LOAM	BEARDEN	No	---	---	---	---	---
19: COLVIN SILTY CLAY LOAM, SALINE	COLVIN	Yes	flood plain	2B3	YES	NO	NO
20: BEARDEN SILTY CLAY LOAM, SALINE	BEARDEN	No	---	---	---	---	---
22: BEARDEN-PERELLA SILTY CLAY LOAMS	BEARDEN	No	---	---	---	---	---
	PERELLA	No	---	---	---	---	---
23F: BUSE-BARNES LOAMS, 15 TO 35 PERCENT SLOPES	BUSE	No	---	---	---	---	---
	BARNES	No	---	---	---	---	---
24: CASHEL SILTY CLAY	CASHIEL	No	---	---	---	---	---
25: CASHEL SILTY CLAY, CHANNELED	CASHIEL	No	---	---	---	---	---
26: COLVIN SILTY CLAY LOAM	COLVIN	Yes	lake plain	2B3	YES	NO	NO
27: DIVIDE LOAM	DIVIDE	No	---	---	---	---	---
29: FARGO SILTY CLAY, SALINE	FARGO	Yes	flood plain	2B3	YES	NO	NO
31B: EMBDEN FINE SANDY LOAM, GRAVELLY SUBSTRATUM, 1 TO 6 PERCENT SLOPES	EMBDEN	No	---	---	---	---	---
32: FARGO SILTY CLAY, 1 TO 3 PERCENT SLOPES	FARGO	Yes	lake plain	2B3	YES	NO	NO
35: FAIRDALE SILT LOAM, 1 TO 3 PERCENT SLOPES	FAIRDALE	No	---	---	---	---	---
36: FARGO SILTY CLAY	FARGO	Yes	flood plain	2B3	YES	NO	NO
37: FARGO SILTY CLAY, DEPRESSIONAL	FARGO	Yes	depression	3,2B3	YES	NO	YES
38: FARGO SILTY CLAY LOAM	FARGO	Yes	lake plain	2B3	YES	NO	NO
39: GALCHUTT SILT LOAM	GALCHUTT	No	---	---	---	---	---
40: FARGO-HEGNE SILTY CLAYS	FARGO	Yes	flood plain	2B3	YES	NO	NO
	HEGNE	Yes	flood plain	2B3	YES	NO	NO

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
41: HEGNE-FARGO SILTY CLAY LOAMS	HEGNE	Yes	lake plain	2B3	YES	NO	NO
	FARGO	Yes	lake plain	2B3	YES	NO	NO
43: GARDENA SILT LOAM	GARDENA	No	---	---	---	---	---
46: GARDENA-GLYNDON SILT LOAMS, 0 TO 3 PERCENT SLOPES	GARDENA	No	---	---	---	---	---
	GLYNDON	No	---	---	---	---	---
47: FARGO SILTY CLAY, SMOOTH SURFACE	FARGO	Yes	flood plain	2B3	YES	NO	NO
48: GLYNDON SILT LOAM, 0 TO 3 PERCENT SLOPES	GLYNDON	No	---	---	---	---	---
49: GLYNDON SILT LOAM, SALINE, 0 TO 3 PERCENT SLOPES	GLYNDON	No	---	---	---	---	---
50: HAMERLY-TONKA LOAMS, 0 TO 3 PERCENT SLOPES	HAMERLY	No	---	---	---	---	---
	TONKA	Yes	depression	3, 2B3	YES	NO	YES
50B: HAMERLY LOAM, 3 TO 6 PERCENT SLOPES	HAMERLY	No	---	---	---	---	---
51: HAMERLY LOAM, SALINE, 0 TO 3 PERCENT SLOPES	HAMERLY	No	---	---	---	---	---
54: LAMOURE SILTY CLAY LOAM	LAMOURE	Yes	flood plain	2B3	YES	NO	NO
55: LADELLE SILTY CLAY LOAM	LADELLE	No	---	---	---	---	---
57: FAIRDALE SILT LOAM, CHANNELED	CHANNELED	---	---	---	---	---	---
	FAIRDALE	No	---	---	---	---	---
58B: MADDOCK FINE SANDY LOAM, 1 TO 6 PERCENT SLOPES	MADDOCK	No	---	---	---	---	---
59: OVERLY SILTY CLAY LOAM, 0 TO 3 PERCENT SLOPES	OVERLY	No	---	---	---	---	---
59B: OVERLY SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES	OVERLY	No	---	---	---	---	---
61: PERELLA-BEARDEN SILTY CLAY LOAMS	PERELLA	No	---	---	---	---	---
	BEARDEN	No	---	---	---	---	---
62: OVERLY-BEARDEN SILT LOAMS, 0 TO 3 PERCENT SLOPES	OVERLY	No	---	---	---	---	---
	BEARDEN	No	---	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
63B: RENSHAW-SIOUX LOAMS, 1 TO 6 PERCENT SLOPES	RENSHAW	No	---	---	---	---	---
	SIOUX	No	---	---	---	---	---
63C: SIOUX GRAVELLY SANDY LOAM, 3 TO 9 PERCENT SLOPES	SIOUX	No	---	---	---	---	---
64: PITS, GRAVEL	PITS, GRAVEL	No	---	---	---	---	---
65: SVEA-BARNES LOAMS, 0 TO 2 PERCENT SLOPES	SVEA	No	---	---	---	---	---
	BARNES	No	---	---	---	---	---
66: WYARD-HAMERLY LOAMS, 1 TO 3 PERCENT SLOPES	WYARD	No	---	---	---	---	---
	HAMERLY	No	---	---	---	---	---
67: GALCHUTT FINE SANDY LOAM	GALCHUTT	No	---	---	---	---	---
71: VALLERS LOAM	VALLERS	Yes	flat	2B3	YES	NO	NO
72: WAHPETON SILTY CLAY	WAHPETON	No	---	---	---	---	---
73: RAUVILLE SILTY CLAY LOAM	RAUVILLE	Yes	channel	4, 2B3	YES	YES	NO
76: WYNDMERE SILT LOAM, 0 TO 3 PERCENT SLOPES	WYNDMERE	No	---	---	---	---	---
76B: WYNDMERE SILT LOAM, UNDULATING	WYNDMERE	No	---	---	---	---	---
77: VALLERS LOAM, SALINE	VALLERS	Yes	flat	2B3	YES	NO	NO
78B: SVEA-BUSE LOAMS, 3 TO 6 PERCENT SLOPES	SVEA	No	---	---	---	---	---
	BUSE	No	---	---	---	---	---
80: WYNDMERE-TIFFANY LOAMS, 0 TO 3 PERCENT SLOPES	WYNDMERE	No	---	---	---	---	---
	TIFFANY	Yes	depression	2B3, 3	YES	NO	YES
82: GLYNDON-TIFFANY SILT LOAMS, 0 TO 3 PERCENT SLOPES	GLYNDON	No	---	---	---	---	---
	TIFFANY	Yes	depression	3, 2B3	YES	NO	YES
83: GALCHUTT-FARGO SILTY CLAY LOAMS	GALCHUTT	No	---	---	---	---	---
	FARGO	Yes	lake plain	2B3	YES	NO	NO
84: BEARDEN-LINDAAS SILTY CLAY LOAMS	BEARDEN	No	---	---	---	---	---
	LINDAAS	Yes	lake plain	3, 2B3	YES	NO	YES
85: FAIRDALE VARIANT SILT LOAM	FAIRDALE	No	---	---	---	---	---
86: DUMPS AND PITS	DUMPS PITS	No No	---	---	---	---	---

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				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	Yes	depression	2B3,3	YES	NO	YES
W: WATER	WATER	Yes	depression	2B3,3	YES	NO	YES

FOOTNOTE: There may be small areas of included soils or miscellaneous areas that are significant to use and management of the soil; yet are too small to delineate on the soil map at the map's original scale. These may be designated as spot symbols and are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II. Areas mapped as water or any map unit that contains one of the following conventional symbols is considered a hydric soil map unit: marshes or swamps; wet spots; depressions; streams, lakes and ponds.

1. All Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:
 - a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
 - b. poorly drained or very poorly drained and have either:
 - (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils
 - (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
 - (3) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for long duration or very long duration during the growing season, or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.

